Abstract of the Disclosure

There is provided a process for producing an intermetallic compound-based composite material containing a reinforcing material and an intermetallic compound. The process includes infiltrating a metal powder into the gaps of a reinforcing material to form a preform and impregnating the preform with an Al melt to give rise to a spontaneous combustion reaction between the metal powder and the Al melt to convert the Al melt into an aluminide intermetallic compound. The Al melt and the metal powder are used in such amounts that they do not remain after the spontaneous combustion reaction. The process can produce an intermetallic compound-based composite material of large size and complicated shape in reduced steps.